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Student Use of Interactive Whiteboards in an Academic Library Setting

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Abstract

The interactive whiteboard is a learning technology that was introduced in the early 1990s, with the most commonly known product being the SMART Board from SMART Technologies. The main market for interactive whiteboards has been elementary schools, but other markets include secondary schools, higher education, libraries, and businesses. Librarians use the technology to enhance active learning and collaboration in instruction sessions. In January 2011, the University of North Texas Libraries installed two Hitachi StarBoards in the new Collaboration and Learning Commons of the Eagle Commons Library for patrons to use independently. Casual observation suggests that although the StarBoards are popular, the patrons are making minimal use of their interactive functions. The authors propose a study of independent patron use of interactive whiteboards in an academic library setting.

Introduction

SMART Technologies founded in 1987 created the first interactive whiteboard (IWB) in 1991 (SMART, History, 2012). Revenue generated from SMART was used to develop a technology that would "combine the simplicity of a whiteboard with the power of a computer" (SMART, Quick facts, 2012). Other terms for the IWB include electronic whiteboard, virtual whiteboard, and various brand names. The easy-to-use interactive

whiteboard technology allows users to project from a PC, and by pressing a finger to the screen, control the computer. Interactive whiteboard software offers the opportunity for the user to annotate Microsoft Office files, draw images, save, print, and email work. SMART envisions for its future "teams collaborating and developing ideas on SMART Board interactive whiteboards, making decisions quickly and communicating with other teams across distances as if everyone was in the same room" (SMART, History, 2011).

The IWB offers many benefits for education, business, and government, although the content of IWB websites and instruction manuals indicates that teachers have become the primary target audience for the technology. Terry Watson, SMART area manager for Russia and India, states "SMART products help teachers engage all types of learners, increasing student potential and improving learning outcomes" (Baburajan, 2009). Primary and secondary teachers use IWBs in the classroom with the goal of making lessons more fun and engaging. They integrate IWBs and their multimedia and manipulative capabilities into lessons on language arts, science, mathematics, and even foreign language acquisition (Gregory, 2010; Murcia & Sheffield, 2010; Schacter, 2011; Xu & Moloney, 2011). Qualitative studies of teachers and students indicate that IWB integration increases student participation, dialogue between teachers and students, and student enjoyment of learning (Genesi, 2009; Mercer, Hennessy & Warwick, 2010; Northcote, Mildenhall, Marshall & Swan, 2010).

School librarians have also integrated IWBs into their storytelling and teaching. Library media specialist Carolyn Gundrum of Waukazoo Elementary School created a "Living Book" with an IWB; she “had the children decide which interactive animal to touch. The children then took turns going to the front of the class and making the story come alive by touching the board in the appropriate spot” (Ekhaml, 2002, p.35). Khalida Mashriqi, a school librarian at P.S. 200 in Queens, New York, teaches students about the importance of organization in the library (Mashriqi, 2011). She uses the IWB to show students “how to use shelf markers, how the library is organized by sections, and how books are organized” (Mashriqi, 2011, p.28), and the students use the IWB to share their answers to questions.

Academic librarians have found that integration of IWBs into instruction sessions improves active learning, an important component of contemporary instruction (Holderied, 2011). IWBs allow the instructor to stand and face the class, providing a more personal experience than the more traditional approach where the instructor sits behind the teaching PC. Knight (2003) at the Western Kentucky University Library discovered “students get more from a face-to-face dynamic interaction in the classroom and their increased alertness is easy to see” (p. 6). Instruction and reference faculty at Long Island University using an IWB in instruction sessions found “its interactive features helped draw students’ attention during instruction sessions” (Wang, 2007, p. 158). This benefit extends to students that give presentations using the IWBs. Schroeder (2007) states “because students are presenting their findings at the front of the class using a high-tech device, their peers recognize them as teachers” (p. 69). Instructor-mediated

use of IWBs in academic libraries clearly increases affective learning by increasing students' emotional involvement, engagement, social interaction, and self-esteem in library classes.

Absent from the literature is information about independent patron use of IWBs in academic libraries. The authors plan to step into this void with an IWB usage study at the University of North Texas Libraries. In January 2011, two Hitachi StarBoards were installed in the Collaboration and Learning Commons (CLC), a new facility within the Eagle Commons Library. The purpose of the CLC is to provide students, staff and faculty with group study spaces and technology to facilitate collaboration. The Hitachi StarBoards are both installed on walls close to corners. Each workstation also has upholstered chairs, a low table, and privacy panels. The panels are telescoping and can be extended to square off the corner where the workstation is located. Essentially, patrons can create their own eight foot square study room with comfortable furniture, projector and screen with interactive capabilities. Patrons check out an equipment box at the service desk to operate the StarBoards. Each box includes a wireless keyboard, wireless mouse, USB receiver, remote for the projector and styluses for the StarBoard.

The StarBoards have been a popular technology at the CLC since the facility's opening in February 2011. Frequency of StarBoard use can be tracked through the circulation of the equipment boxes. Figure 1 shows the number of circulations of StarBoard equipment following the opening of the CLC in the Spring 2011 semester.

Figure 1. Combined Checkouts of Two Hitachi StarBoards, May – December 2011.

	May	June	July	Sept.	Oct.	Nov.	Dec.
Combined checkouts per month	78	22	36	61	54	69	34

The statistics for the StarBoards are an underestimate of the actual number of patrons who use the IWB workstations for several reasons. The statistics do not reflect the actual number of people using the IWBs because one checkout generally means a group of patrons have used the StarBoard. Some patrons have figured out how to turn on the projector attached to the StarBoard without using the remote, so they can use the technology without checking out the equipment box. Finally, there are patrons who simply use the workstation space without turning on the StarBoard, thus we have no record of their usage.

The University of North Texas Libraries are planning to construct another learning commons in the Willis Library and would like to know whether to invest in the installation of more IWBs in the new facility. Despite the StarBoards popularity, casual observation indicates that patrons are using few of the interactive features of the IWBs. Patrons are seen projecting webpages and navigating the Internet. Often they will project Microsoft Office documents to discuss and revise them. Rarely do we see the patrons using the annotation, drawing, or image functions of the StarBoards. The Eagle Commons Library has offered workshops on how to use the StarBoards since February

2011, but attendance has been low. It appears that patrons do not have much interest in learning the more advanced functions of the StarBoards.

Patron interaction with the StarBoards has raised the question of whether IWBs are necessary to meet their learning and collaboration needs. Perhaps other less-expensive technologies would meet the patrons' needs. To inform decisions on technology for the future learning commons at the Willis Library, the authors plan to conduct a usage study of the StarBoards at the Eagle Commons Library. The research questions we will address are the following:

1. How are the patrons in the Collaboration and Learning Commons interacting with the StarBoards?

2. Are patrons using the StarBoards to teach one another, and if so, for the same reasons IWBs are used in librarian-mediated instruction?

3. Is the popularity of the workstations influenced by the study space itself?

4. Could technologies other than the IWBs meet the needs of the users?

Methods

The authors plan to use the qualitative method of the survey to gather data in the first part of the study. The survey will be conducted in the Spring 2012 semester at the Eagle Commons Library. The survey questions will explore which functions of the StarBoards

patrons are using and whether the workstation space influences patrons' choice to use the IWBs. The bulk of the survey will consist of statements regarding StarBoard use followed by frequency or Likert scales for responses. At the bottom of the survey, there will be a detachable form for indicating that the respondent would like to participate in the follow up focus groups. Figure 2 is the current version of the planned survey. The content of the survey may change following the Institutional Review Board (IRB) consideration of the application for the study.

The implementation of the survey will take advantage of the equipment box checkout required to use the StarBoards. Multiple staff members who work at the Eagle Commons Library will be trained to distribute the survey to patrons when they come to the service desk to check out the equipment boxes. Full-time employees and part-time undergraduate and graduate library assistants will be trained to explain the study's consent form and how to complete and return the survey. Before the submission of the IRB application, all of these library employees will have to complete the "Protecting Human Research Participants" online course created by the National Institutes of Health. The staff will also be trained to inquire whether a group will be using the StarBoard workstation, and when the answer is affirmative, to go to the workstation to distribute the survey to the rest of the group members. The Eagle Commons Library will conduct the survey until 75 to 100 responses are collected.

Figure 2. Interactive Whiteboard Usage Survey

1. I am (circle one):

Undergraduate Graduate Student Staff Faculty Other:

2. I use the StarBoard at the Eagle Commons Library (circle one):

1 time a month 2 times a month 1 time a week 3-4 times a week 5-6 times a week

Please circle the word that best reflects how often you do the action below

3. I check out the equipment to use with the StarBoard.

Never Rarely Sometimes Frequently Always

4. I use the drawing features of the StarBoard software.

Never Rarely Sometimes Frequently Always

5. I use the StarBoard software to create shapes.

Never Rarely Sometimes Frequently Always

6. I use the StarBoard software to annotate files from other applications, e.g., Word and Internet Explorer.

Never Rarely Sometimes Frequently Always

7. I use the StarBoard by myself.

Never Rarely Sometimes Frequently Always

8. I use the StarBoard with a group of people.

Never Rarely Sometimes Frequently Always

9. I write on the regular whiteboard panels at the StarBoard workstation.

Never Rarely Sometimes Frequently Always

10. I use the StarBoard software to import and modify images.

Never Rarely Sometimes Frequently Always

11. I use the StarBoard to view and navigate webpages.

Never Rarely Sometimes Frequently Always

12. I use the StarBoard to work in web-based software, e.g., Blackboard, GoAnime, and Study Blue.

Never Rarely Sometimes Frequently Always

Circle the response that most closely matches your response to the statements below

13. The StarBoard workstation has comfortable seating.

Strongly Disagree Disagree Neutral Agree Strongly Agree

14. I like to use the StarBoard workstation because I can make it into a private study area with the telescoping panels.

Strongly Disagree Disagree Neutral Agree Strongly Agree

15. I like the StarBoard because I can project and enlarge documents, files, or webpages.

Strongly Disagree Disagree Neutral Agree Strongly Agree

16. The StarBoard makes it easy for a group to see and discuss a project.

Strongly Disagree Disagree Neutral Agree Strongly Agree

17. I like to use the StarBoard workstation over one of the study rooms in the Eagle Commons Library because…

It is a more private space.

Strongly Disagree Disagree Neutral Agree Strongly Agree

It is a cozier space.

Strongly Disagree Disagree Neutral Agree Strongly Agree

It has more comfortable furniture.

Strongly Disagree Disagree Neutral Agree Strongly Agree

The equipment is easier to use.

Strongly Disagree Disagree Neutral Agree Strongly Agree

Do you have any comments about the StarBoards?

Once the survey data is analyzed, the authors will conduct follow up focus groups to further explore trends indicated in the data. A separate IRB application will be submitted for this stage of the usage study. We plan to hold four focus groups: undergraduates, graduates, staff, and faculty. The focus groups will be held in instruction rooms in the Eagle Commons Library which gives us the capability to videotape the discussions. This qualitative methodology will allow deeper investigation of the ways patrons use the StarBoards, how they interact when using them, and whether other technologies could better meet their needs and the Libraries' budget. The questions will be finalized after reviewing the data gathered from the survey. The preferences and trends arising from the survey and focus groups will guide the decisions of the UNT Libraries in equipping the Willis Library Learning Commons with appropriate learning technologies.

Expected Results

Informal observation suggests that patrons are not fully utilizing the capabilities of the StarBoard IWB. Patrons are rarely seen using the annotation and drawing functions, or the image library contained in the StarBoard software. The ability to project a webpage or document for a group to view and discuss seems to be the main attraction of the StarBoards. Additionally, the patrons appear to be attracted by the ability to create a private study space at the StarBoard workstations. Most groups extend the privacy panels around the workstation space to create a small, square study space.

The patron behaviors described above do not necessarily require the presence of a traditional IWB. Patrons could project documents or webpages for discussion with a

variety of projector and screen technologies, including software that converts a standard whiteboard into an interactive surface. The attraction of the private group study space may indicate that funds would be better spent on the creation of similar flexible spaces or small group study rooms with projection capabilities.

Conclusion

The proposed usage study of IWBs in the Eagle Commons Library at UNT will benefit both the UNT Libraries and the field of academic librarianship. The planned survey and focus groups will inform purchases of learning technology and construction of study spaces in the future Willis Library Learning Commons. The paper the authors plan to write following the study will fill a gap in the literature about IWB use in academic libraries. Previous studies have explored the use and benefits of IWBs when used by librarians in instruction sessions. The planned study will contribute information about independent patron use of IWBs and aid academic libraries in deciding whether to install IWBs in their learning spaces.

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